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FINAL REPORT

INCREASING THE INTRINSIC REWARD VALUE IN JOBS AND CAREERS

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The basic parameters of intrinsic motivation to work are explored. Principles are sought relevant to ways of redesigning jobs to increase their intrinsic motivating properties, to avoid task overload and boredom. Coordinated field and experimental laboratory studies are described.

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ABSTRACT

The basic parameters of intrinsic motivation to work are explored. Principles are sought relevant to ways of redesigning jobs to increase their intrinsic motivating properties, to avoid task overload and boredom. Coordinated field and experimental laboratory studies are described.

PURPOSE

To explore the basic parameters of intrinsic motivation to work, principles were sought relevant to ways of redesigning jobs to increase their intrinsic motivating properties, and to avoid task overload on the one hand, and boredom on the other. We concentrated on the fundamental question: What stimulus properties of a job itself will make it more attractive to a job holder? Two kinds of jobs were examined: maintenance and monitoring using two approaches: field study and laboratory experiment.

Properties investigated included:

1. The job requires abilities valued by the operator.
2. Self-control and autonomy are possible.
3. The job provides a sense of completion.
   a. It is not such a small part of a whole task that it lacks meaningful completion in its own right.
   b. It is not so long in time that it fails to provide a readily perceived termination.
4. The job provides feedback of performance.
5. The job creates a sense of progress or growth and "forward thrust."
6. The job involves the complete attention and absorption of the job holder.
7. The job requires some optimum variety of skills of the operator.
8. The job provides a pattern of stimulation which is optimal for the job encumbent.

INVESTIGATIONS

Literature Survey

Relevant literature was surveyed and reference lists compiled

with the aid of a computerized editing program, WYLBUR, in five areas: human factors, intrinsic-extrinsic motivation, task analysis, laboratory studies in maintenance and monitoring, and laboratory studies on the effects of goals and intentions in task behavior. Several hundred items led to a working draft: "Intrinsic-Extrinsic Motivation: Some Parameters for Job Design," summarizing the findings in the recent psychological, social-psychological, and industrial-social psychological areas relevant to job design and motivation.

FIELD STUDIES

Interviews

To identify and define the dimensions on which jobs might be re-designed, following the literature survey, a number of on-site interviews about Naval monitoring and maintenance tasks were conducted to gather information on possible dimensions to include in succeeding phases of the study. Fifteen active duty men mostly in job ratings of the maintenance or monitoring categories were interviewed. The interviews were open-ended and lasted from one-half to one hour. The focus of the interviews was on what the men liked most and liked least about their jobs, the reason for their answers, and suggestions on how they felt the jobs could be redesigned. Similar interviews were conducted with twelve men from Army Reserve unit for a total of 27 interviews. Interviewing was terminated when additional information became redundant.

Each interview was recorded on tape, transcribed, and content analyzed. From the interviews and literature review, sixteen attributes were generated and defined together with specific items to measure the amount or frequency of each attribute.

Reallocation Study

Each job element was named, defined in terms that blue collar workers could understand, and followed by seven statements expressing "how much" of that element is present. (Figure 1 is an example.) Two problems manifested themselves immediately. The first was a discrimination problem and the second was a scaling problem.

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1. Goal Clarity: the degree of clarity and specificity in the objectives of the job.
    1. People always explain what I'm to do in ways that I can understand.
    2. Nobody has to tell me what I'm supposed to get done each day.
    3. It is clear what someone in my job should accomplish.
    4. The direction I go in seems to change from one day to the next.
    5. Sometimes it is hard for me to understand what others want me to do.
    6. I have to be constantly asking people what to do on this job.
    7. By the time they get to me plans are usually distorted.

Figure 1. Job structural attribute named, defined, and followed by sample statements expressing "how much?"

Smith and Kendall's (1963) reallocation procedure was employed to test the conceptual discriminability of the elements. Several hundred judges, mainly from Army reserve units (non-college level) were instructed to assign each of the statements into the defined category that they believed best corresponded with the meaning of the statement.

The criteria for the retention of an item were that 70% of its allocations were to a single category and no more than 20% allocations to any second category.

Magnitude estimation was employed in which any value is assigned to a referent concept and then all other stimuli are judged in relation to the referent concept. For example, if an individual attaches the value 10 to the work "sometimes" he might assign zero to the word "never" and 100 to the word "always" if he felt that always expressed 10 times as much as the word sometimes. Of the twenty-five or so stimuli presented, the aim is to arrive at five or six that bear the approximate ratio 5, 4, 3, 2, 1, 0 to each other.

Subjects were drawn from several populations, namely, MBA students (most of whom are working), college students and high school students. Both males and females participated, and the total sample was 125 Ss. Results were reported in Bass, B. M., Cascio, W. F., & O'Connor, E. J. Magnitude estimations of frequency and amount, Journal of Applied Psychology, 1974, 59(3), 313-320.

Job Design Elements

The job design elements studied dealt with the work itself (Figure 2) and the work environment (figure 3).

Figure 2

WORK ITSELF

1. Variety
2. Attention
3. Learning New Skills (Opportunity)
4. Learning New Skills (Necessity)
5. Closure
6. Task Interdependence (Forward Sequence)
7. Task Interdependence (Backward Sequence)
8. Internal Feedback
9. External Feedback (How Often)
10. External Feedback (How Much)
11. Independence (Pace)
12. Independence (Methods)
13. Independence (Sequence)
14. Responsibility (Culpability)
15. Responsibility (Material)
16. Responsibility (Monitary Loss)
17. Responsibility (Human Life)
18. Optional Interpersonal Interaction
19. Required Interpersonal Interaction
20. Order
21. Goal Clarity
22. Physical Effort
23. Job Difficulty
24. Job Complexity

Figure 3

WORK ENVIRONMENT

1. Salary
2. Interpersonal Relations (Supervisor)
3. Interpersonal Relations (Subordinates)
4. Interpersonal Relations (Peers)
5. Technical Supervision
6. Company Policy and Administration
7. Working Conditions
8. Status A
9. Status B
10. Job Security
11. Availability of Resources
12. Work Scheduling
13. Job/Person Fit

Importance of Individual Differences

Within our overall conceptual framework, individual differences played a crucial part. We conceptualized an overall "g" factor in the population which will influence a person's preference for job complexity. This is the brainpower factor, or as R. S. Woodworth stated in 1918, "capacity is its own motivation". "Big" people prefer "big" jobs, "little" people, "little" jobs. We also can conceive of "s" factors which represent the specific task-related aptitudes which a person brings to the performance of any given task. So far this theoretical position is consistent with Spearman's (1904) two-factor theory of intelligence. In addition we hypothesize that "p" factors are operating. These "p" factors represent the preferences and characteristics of an individual. These will include such factors as task orientation, self orientation, and job involvement. In terms of Bass' Orientation Inventory, we viewed people as varying in task-orientation, i.e. the extent to which they obtain satisfaction for persisting at tasks and completing them successfully. They also vary in self-orientation toward extrinsic rather than intrinsic rewards.

A technical report was completed by W. Cascio "Value Orientation, Organizational Rewards, and Job Satisfaction" dealing with one aspect of the individual difference issue.

The nation-wide sales force (N=540) of a large food and beverage firm responded to a survey designed to investigate the role of value orientation as a moderator of the relationship between organizational rewards and job satisfaction. From equifinality theory it was hypothesized that individuals who emphasize the intrinsic (extrinsic) aspects of work can achieve the same relative level of overall job satisfaction

if intrinsic (extrinsic) organizational rewards match their value orientation.

Results indicated that the normative (Survey of Work Values) instrument was most predictive of both intrinsic and extrinsic value orientation. The intrinsic subscale of this instrument correlated zero with the extrinsic subscale. The two scales representing intrinsic and and extrinsic organizational rewards, however, correlated .41. These results are counter to those reporter earlier by Lawler and Porter. A modification of the Lawler-Porter model relating performance to job satisfaction was suggested to account for the positive spillover effect due to the interaction of intrinsic and extrinsic organizational rewards.

A double cross-validation procedure was employed to arrive at the best estimate of the predictive ability of each of the four models of job satisfaction. In order of predictive ability they were: "Is Now" (.55), "Importance-Rewards" (.46), "Orientation-Rewards" (.40), and "Importance-Rewards" (.32). It was suggested that each model could have utility in a specific context and within a well-defined conceptual framework. An attempt was made to relate each model to those contexts in which its use would be most appropriate.

For those Ss high in intrinsic value orientation and low in extrinsic value orientation, satisfaction with the work itself was not the most significant determinant of overall satisfaction. However, satisfaction with work environment factors was the most significant determinant of overall satisfaction for those Ss high in extrinsic value orientation and low in intrinsic value orientation. Finally

the high intrinsic/low extrinsic group was significantly more satisfied in terms of overall as well as job facet satisfaction across all facets than the high extrinsic/low intrinsic group. These results were discussed in terms of an organizational climate variable.

We are now in the latter stages of the field study. The summary table indicates work performed and to be performed.

LABORATORY INVESTIGATIONS

A laboratory for studying monitoring and maintenance was created at the University of Akron under subcontract.

The Monitoring Task

The basic monitoring task consists of identifying symbols projected on a screen in random locations. The stimuli are numerous geometric shapes projected on a 23" x 23" screen by Kodak Ektographic slide projectors (Model E-2). In order to minimize visual loading cues, slides are presented to each subject alternately from two projectors. McKinsey dissolve control units (Model AD-2) are adjusted so as to minimize changes in light intensity. The screens are divided into 6 areas.

There are four booths in which the subjects are seated in front of the screens. Two slide projectors service each booth. The rate of presentation of the slides is controlled for all four booths by an Optisonic's Sound-o-matic 1 cassette programmer-recorder. In this way all four subjects simultaneously receive identical stimuli. The subjects responses, both latency and errors, are recorded by a Lafayette Instrument Company recorder (Model 76103).

The experimental design involves both vertical and horizontal job enlargement. In addition, is simultaneous vertical and horizontal enlargement as part of the basic research design.

Summary Table for Field Study

Stage	Objectives	Measures	Methods	Outcomes
1	To arrive at a set of attributes that reflect intrinsic motivational properties of jobs		Literature review and synthesis of existing theory and data	Isolation of a minimum number of structural variables that describe intrinsic motivating properties of jobs
2	Investigate problem of job redefinition across several job levels--superior, subordinate, job analysis and relate to g, s, and p measures	g, s, and p measures; job descriptions (about 25), ratings on each attribute for each job description by every subject	Compare means and variances of attribute ratings across subject groups; relate ratings to g, s, and p measures within groups	Quantitative data that shows how jobs are redefined by different groups and how job perception relates to individual differences
3	To obtain importance weights for each job attribute, cross validate the weights, and relate to g, s, and p measures	Each subject in sample may give an overall rating or a preference judgment for each job in terms of his perceived satisfaction	Either regression analysis or Srinivasan's (1971) procedure to find weights	Importance weights for each job attribute for each individual; relate to g, s, p measures
4	To relate structural attributes of jobs to individual job outcomes	Either experimental manipulation of attributes in lab setting and/or selection of real jobs that vary on attributes	Compare subjects subjective perceptions of time, boredom, and satisfaction for different amounts of job attributes	Evidence to show the relevance of the job attributes for affecting workers intrinsic motivation

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The first set of studies focused upon the decision-making and responsibility dimensions based on completed pilot studies. The physical characteristics of the display were systematically varied. Physical characteristics varied included: frequency of signal occurrence, signal-to-noise ratio, intersignal interval, display density, and knowledge of results.

Before beginning the test session on the monitoring task all subjects were given a battery of tests which are related to the basic objectives of the study. Upon completion of the monitoring task, subjects were given selected work-related measures.

The Maintenance Task

Based upon the results of the field studies of maintenance personnel, a laboratory maintenance task was constructed to deal with the independent variables of variety, independence, learning new skills, and closure. The maintenance task involved problem diagnosis where the independent elements were systematically varied within the general context of the research design. The job structure questionnaire used in the field studies was administered to the laboratory subjects. Technical reports are expected to be completed by the end of 1974 on this work which is continuing at the University of Akron.

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